AMENDMENT TO THE SPECIFICATION:

Please change the Title to read as follows:

PROCESS FOR THE TRANSFER OF A THIN FILM

Please replace the cross reference to related application paragraph on page 1 of the specification with the following amended paragraph:

This application is a continuation of U. S. Application Serial No. 09/380,322, filed August 30, 1999, now U.S. patent no. 6,756,286, which is a section 371 application of PCT/FR98/02904, filed December 29, 1998.

Please replace the paragraph on page 1 beginning at line 9 with the following amended paragraph:

Document FR-A-2 681 472 (corresponding to patent U.S. Pat. No. 5, 374, 564) describes a process for making thin films of semiconducting material. This document ~~divulges~~ discloses that the implantation of a rare gas or hydrogen into a substrate made of a semiconducting material can cause the formation of a layer of micro-cavities or micro-bubbles (also denoted "platelets") at a depth close to the average projected range (Rp) of the implanted ions. The concept of micro-cavities obviously includes micro-cracks. The thickness of the layer of micro-cavities is determined by the implantation conditions. If this substrate is put into intimate contact with a stiffener through its implanted face and a heat treatment is applied at a sufficiently high temperature, an interaction occurs between the micro-cavities or the micro-bubbles separating the semiconducting substrate into two parts, firstly a thin semiconducting film bonding to the stiffener, and secondly the remainder that bonds to the semiconducting substrate. Separation takes place at the location of the micro-cavities or micro-bubbles. The heat treatment is such that the interaction between the micro-bubbles or micro-cavities

created by the implantation induces a separation between the thin film and the remainder of the substrate. Therefore a thin film is transferred from an initial substrate to a stiffener used as a support for this thin film.

Please replace the paragraph on page 3 beginning at line 14, with the following amended paragraph:

Document EP-A-0 767 486 proposes an improvement to the process ~~divulged~~ disclosed in document FR-A-2 681 472 mentioned above. According to document EP-A-0 767 486 (see column 8), the process ~~divulged~~ disclosed by document FR-A-2 681 472 has the following disadvantages. The choice of the thickness of the film to be transferred is a weak degree of freedom. The thickness of the film to be transferred (corresponding to Rp) and the conditions for separation of the film from the initial substrate are inter-related. The planeness of the film surface obtained after separation is unsatisfactory, and there is no way of maintaining a uniform thickness of a thin film during the transfer. The improvement proposed by document EP-A-0 767 486 consists of performing the ion implantation at depth Rp in a porous layer of silicon formed on the surface of a silicon substrate. This ion implantation causes an increase in the porosity (pore density) to the extent that micro-cavities appear in the walls of the pores of the porous layer. This layer is then considered as being a fine porous structure. Under some implantation conditions, separation is caused in this fine porous layer in accordance with the mechanism described in document FR-A-2 681 472. Therefore, there are two zone effects, firstly due to a zone of pores created by a porous silicon generation step, and secondly due to a zone of cavities generated between the pores in the small perfect silicon zones as in the process according to document FR-A-2 681 472. Therefore, the proposed improvement consists of using a porous layer to obtain a layer with a well-controlled uniform thickness after separation.

Please replace the paragraph on page 4 beginning at line 10, with the following amended paragraph:

The process ~~divulged~~ disclosed by document EP-A-0 767 486 recommends the formation of porous silicon (the order of the porosity is a percentage equal to several tens), which is equivalent to removing silicon or material from the separation zone which causes weakening of the material.

Please replace the paragraph on page 4 beginning at line 16, with the following amended paragraph:

A more significant improvement to the process ~~revealed~~ disclosed by document FR-A-2 681 472 would be to reduce thickness of the micro-cavities layer obtained by ion implantation. This is what is proposed in this invention.

Please replace the heading and subsequent paragraph on page 4, beginning at line 23 with the following amended paragraph:

~~DESCRIPTION OF THE INVENTION~~

BREIF SUMMARY

The improvement proposed by this invention is made possible due to creation of an inclusion or a set of inclusions in the initial substrate material, in order to confine gaseous compounds introduced during the ion implantation step. An inclusion is a volume of material for which the properties are not the same as the properties of the substrate material from which one or more thin films are to be transferred. Inclusions may be in the form of a layer that extends approximately parallel to the surface through which the implantation is done. These volumes may have a variety of shapes and their dimensions may vary from a few tens of nanometers to several hundreds of micrometers. For example, the inclusions can be in the form of one or more implanted regions that function as confinement layers configured to trap implanted species. Further, the inclusions can be in the form of one or more layers deposited by a chemical vapor deposition process, epitaxial growth process, ion

sputtering process. Inclusions can also be in the form of a stressed region or layer formed by any of the aforementioned processes, or a layer in which cavities have been etched. Still further, inclusions can be a region formed by heat treatment of an initial support or by heat treatment of a layer formed by any of the aforementioned processes.

Please replace the paragraph on page 5 beginning at line 5, with the following amended paragraph:

The role of these inclusions is to act as traps for implanted gaseous compounds. The radius of action of these traps depends on the nature of the inclusions made. In this case, there is no removed material, as is the case for the process ~~divulged~~ disclosed by document EP-A-0 767 486.

Please replace the paragraph on page 7 beginning at line 28, with the following amended paragraph:

~~It~~ The layer of inclusions may also be formed by the implantation of elements in a substrate layer. These elements may be implanted in one or several steps. Implantation of these elements may be assisted by heat treatment capable of increasing the efficiency of traps, this heat treatment possibly being done before, during and/or after implantation. This heat treatment may modify the morphology and/or composition of the inclusions, which encourages subsequent confinement of gaseous compounds. This heat treatment is done at a temperature and for a period such that it cannot be used to make a fracture over the entire inclusions layer.

Please replace the paragraph on page 22 beginning at line 3, with the following amended paragraph:

In the case of ion implantation, this effect is illustrated by a reduction in the width of the implantation profile due to a higher concentration of implanted compounds around

the implantation Rp. For example, consider a structure to be transferred composed of a 0.4 .mu.m thick SiO.sub.2 film generated on a silicon support. A first ion implantation of hydrogen equal to 3.10.sup.16 H.sup.+ /cm.sup.2 with an energy of 100 keV designed to generate inclusions, will result in a concentration of hydrogen at the average depth of 0.9 .mu.m. A heat treatment is carried out typically at about 350.degree. C. for 2 hours, and is designed to modify the morphology of the inclusions (micro-cavities). It is found that the layer containing the cavities is thinner than if the implantation had been done with a higher dose as in the case of the process ~~divulged~~ disclosed by document FR-A-2 681 472. The inclusions zone corresponds to this layer of growing micro-cavities. A second implantation of 2.10.sup.16 H.sup.+ /cm.sup.2 will be sufficient to enable a fracture close to this inclusions zone during separation heat treatments, for example at 500.degree. C. for 1 hour.

Please replace the paragraph on page 27 beginning at line 33, with the following amended paragraph:

The process according to the invention is particularly attractive for the transfer of structures in which one or several films must not be subjected to heat treatment at a temperature as high as the temperature involved in the process ~~divulged~~ disclosed in document FR-A-2 681 472. The process is also useful in the case in which the structure to be transferred is composed of materials with different coefficients of thermal expansion.